Driver’s Handbook

B7L Double Deck

VOLVO

Foreword

This book describes the B7L Double deck with D7C engine and multiplex electrical system Version 2.

This manual contains general information on instruments and controls as well as driving instructions.

Because much of the equipment in the bus is fitted by the body manufacturers, this manual will deal mainly with the chassis.

For service information, please refer to our service manuals and service literature. In the section “If something happens” you can find help and instructions in case something unforeseen happens.

Technical data, construction information, descriptions and illustrations in this book, that were current when the book was published, can have been changed. We reserve the right to make changes without prior notice.

The following levels of observations, cautions and warnings are used in this Service Documentation:

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Caution: Indicates an unsafe practice where damage to the product could occur.

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Volvo Bus Corporation
Göteborg, Sweden

Order number: 20 023341

Contents

Driver's responsibility

- As the driver of the vehicle, you are responsible for the safety and comfort of the passengers during the journey. Therefore, do not drive the bus before you have read this driver's manual. You must be familiar with all the indicator and warning lights and with what to do if something happens.
- As the driver of the vehicle, you should be aware of the vehicle weight and loading capacity. See the instructions on warning stickers, the vehicle registration book and on the identification plate.
- As the driver of the vehicle, you must always foresee risks to your passengers.
- It is your responsibility to ensure that safety equipment is in place. Check regularly therefore the working order of safety belts, emergency door opening, door sensitive edges, fire extinguishers and first aid equipment.
- The brakes on the bus are operated by compressed air. Never drive if the air pressure is too low or if you discover other problems with the brakes.
- Pay attention to any steering faults. The vehicle can be steered even if the power steering is not working, although the steering will be heavy.
- Never crawl under the bus if it is supported by a jack. Use approved vehicle supports or a solid stand in case of punctures or wheel changes.
- Lifting devices and supports should stand securely on a horizontal surface. The wheels that are not to be lifted should be blocked to ensure that the vehicle will not start to move.
- Re-tighten the wheel nuts after approximately 200 km if the wheels have been removed.
- Check the wheel nut tightness every 6 months regardless of whether the wheels have been removed or not.
- Follow the recommended service and maintenance programme to maintain the bus's condition and safety.
- Pay attention to exhaust and fuel smells. Any leaks should be taken care of immediately at the garage.
- The bus tyres and rims should be approved for the intended load and speed in accordance with current legal requirements.

Faults and warnings

There are three different types of signals that give the driver all the necessary information on the vehicle.

- Stop message
- Warning message
- Information message

Above the display are three lamps (for information, warning and stop messages) to attract the attention of the driver whenever necessary.

Any messages and their associated symbols are automatically shown in the display.

Several messages may be active at the same time. A new message will replace any existing message, providing the new one has higher priority. This means that the message shown in the display always has highest priority.

For more detailed information on the functions of the display see separate driver instructions “Display”.

Stop message

WARNING

When this lamp comes on, the vehicle must be stopped immediately and the engine switched off. If the vehicle is not halted and the engine switched off, there will be serious consequences for the vehicle, driver/or passengers. A buzzer also sounds when the stop warning light comes on and the engine is running.

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Warning message

Note: When this lamp comes on, the vehicle should be immediately driven to the workshop for repair.

T3014365

The vehicle is not in danger of imminent damage and can normally complete the present task.

This lamp sometimes comes on to draw the driver's attention to something, e.g. an open baggage door. The appropriate warning icon is then shown on the display, refer to the section headed "Display".

Information message

When this light comes on a new information message is displayed. This does not mean that there is something wrong with the vehicle.

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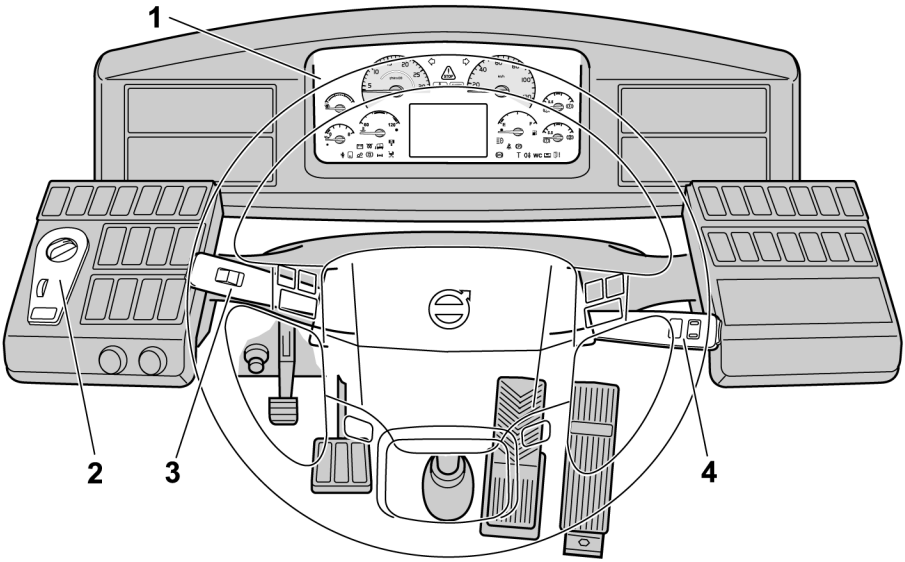
4 Instruments and controls

Driver’s area



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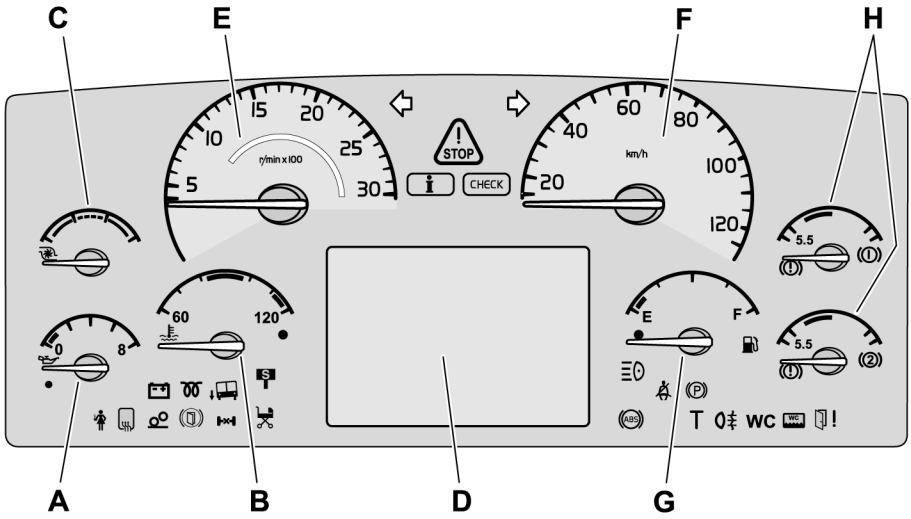
1 Instrumentation
2 Light switch
3 Controls for direction indicators and idling control
4 Display control stalk

Instrumentation



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Types of instruments

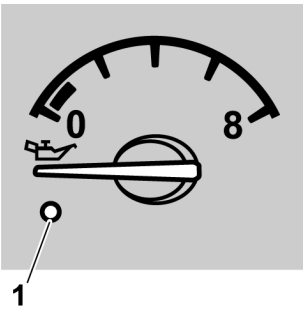
A Engine oil pressure gauge
B Coolant temperature gauge
C Turbocharger pressure gauge
D Display, see separate driver instructions “Display”
E Tachometer
F Speedometer
G Fuel gauge
H Air pressure gauge for brakes

Oil pressure gauge (A)

The oil pressure gauge indicates engine oil pressure. While driving with a warm engine, the pointer should show 3–5 bar (300–500 kPa). The bus must not be driven when the pointer is in the red zone!

Note: It is possible that the pointer will go slightly into the red zone when the engine is idling. This is not serious provided the pointer goes above 3 bar (300 kPa) again when the engine speed increases.

The following will be indicated if the oil pressure in the engine drops too low:
– warning lamp (1) lights
– the STOP lamp lights
– the acoustic signal sounds (if the engine is running)



1. Warning lamp, red

WARNING

If the warning light comes on while driving; stop the engine and locate the cause!

Engine coolant temperature gauge (B)

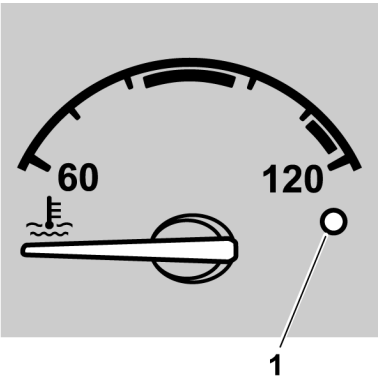
The temperature gauge shows the temperature of the engine cooling system. Under normal driving conditions, the temperature pointer should stay below the red zone (normal operating temperature between 80 °C och 100 °C).

The engine is fitted with overheating protection that reduces engine power to 50 % when the temperature has reached the red zone. The bus can still be driven while its engine overheating protection is in operation.

WARNING

The bus must not be driven if the temperature rises even higher as this can cause damage to the engine.

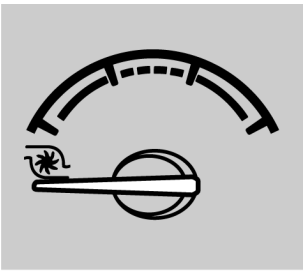
An indicator signals when the cooling system temperature is too high.
– warning lamp (1) lights
– the STOP lamp lights
– the acoustic signal sounds (if the engine is running)



1. Warning lamp, red

Turbocharger pressure gauge (C)

The turbocharger pressure gauge measures the boost pressure in the inlet manifold. High turbocharger pressure means higher fuel consumption. The gauge therefore helps you to drive as economically as possible. When driving on the level the indicator should remain still and be in the green zone.



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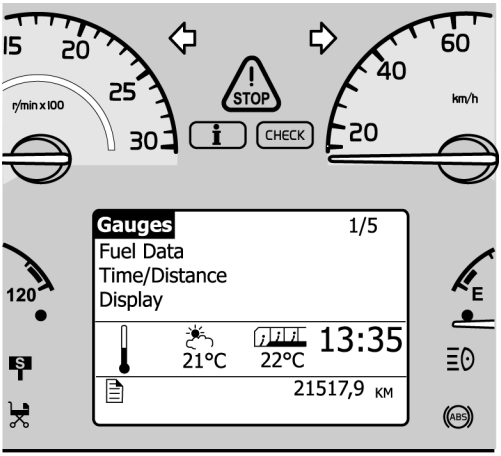
Display (D)

The display contains several main menus and sub-menus with their associated functions. For more information, see separate driver instructions “Display”.



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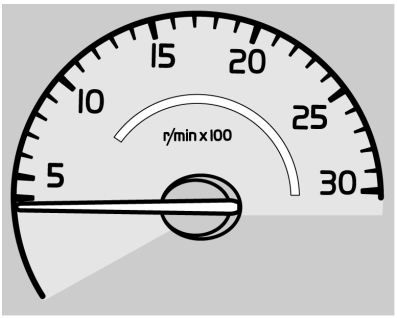
Tachometer (E)

The tachometer display is divided into three sections: Under normal conditions use the green zone, which will give the best driving economy. Use the dark zone when engine braking, as it works most effectively in this zone.



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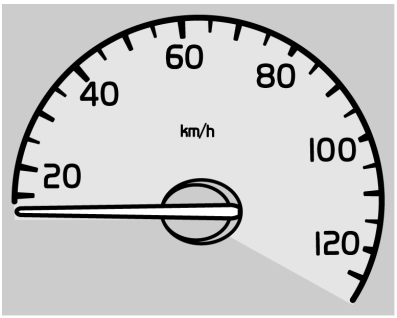
WARNING

Avoid the red zone. Such high engine speeds can damage the engine and the gearbow.

Speedometer (F)

The speedometer shows the speed of the bus in km/h. The speedometers for some market areas also show mph.



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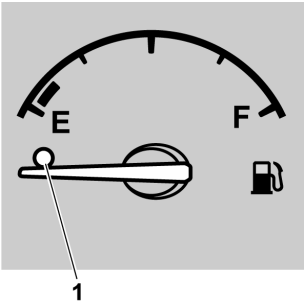
Fuel gauge (G)

The fuel gauge shows the amount of fuel in the tank. The red zone and the warning lamp (1) give a warning of low fuel level.

The display gives considerable information on the fuel situation, e.g. fuel consumption, point to point information and remaining fuel. For more information, see separate driver instructions “Display”.



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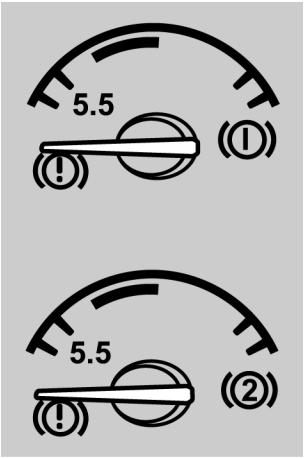
Air pressure gauge for brakes (H)

WARNING

If a warning lamp comes on, stop immediately! The warning lamp will come on if the air pressure in any part of the braking system is too low. Investigate the reason for the loss of pressure.

When the engine is started after it has not run for a while, the air pressure can have sunk to a level that is too low for driving away. The warning lamp will remain lit until the braking system air pressure has risen to the correct level. If there is no air in the braking system, it can take some time before the indicator begins to move.

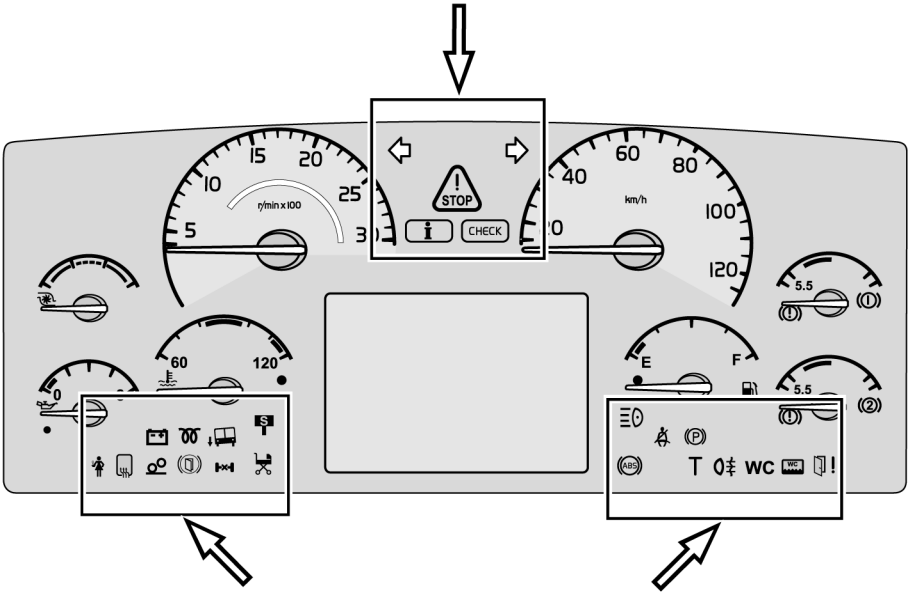
During driving the gauge should remain within the green zone, but during braking it can go below the green zone for a short time.



T0012176

1. Air pressure, front brake circuit.
2. Air pressure, rear brake circuit.

Lamps and symbols in the instrument panel.



Sym-bol	Meaning	Sym-bol	Meaning
	Left indicator on		Service personnel
	Right indicator on		Winscreen / mirror heating activated
	Stop, there is a fault in the vehicle		Battery not charging
	Information message		The bogie unweighting switch is on
	Check		Pre-heating on

	Door brake activated		Seat belt reminder
	Curtsy activated (for easier access)		Parking brake applied
	Differential lock activated		Check the tachograph
	Stop at the next lay-by		Rear fog lights on
	Entering or exiting the bus with a pram		WC engaged
	Main beam		WC tank full
	ABS not functioning		Fault in the door

Next stop signal (optional extra)

The stop signal system consists of:

- signs on the ceiling of the bus
- control light on the instrument panel
- push buttons
- acoustic signal

T0012013

The signal is activated by any one of the stop buttons. When the stop signal is activated, the stop sign or signs on the ceiling and the indicator lamp are lit, and the audible signal sounds. The system is deactivated when a door is opened, but it can also be reset manually with the switch on the control panel.

Perambulator signal (optional extra)

The pram signal system consists of:

- control light on the instrument panel
- buttons inside and outside the bus
- acoustic signal

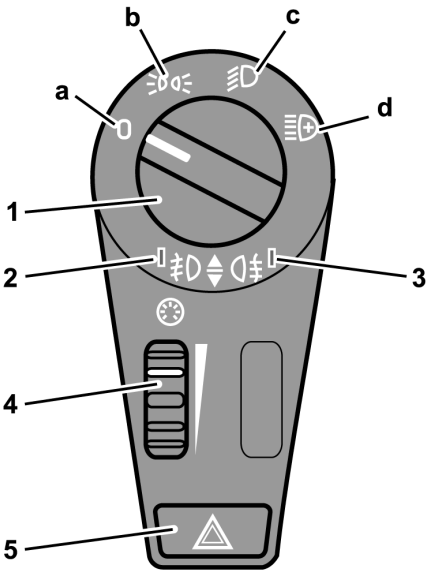
T0012012

If any of the buttons in/on the bus are pushed, the system is activated. When it is activated, the indication light is lit and the audible signal sounds. The system is deactivated when the exit doors are closed.

Light switch

a Lighting switched off or automatic dimmed lighting
b Parking lights
c Driving lights
d Spotlight

1 Light switch
Pull out: Rear fog light (the light is switched off when the button is pushed in again).
Push in: Front fog lights (the lighting is switched off when the button is pulled out again).
2 Indicator lamp, front fog light
3 Indicator lamp, rear fog light
4 Rheostat for instrument lighting
5 Warning lights



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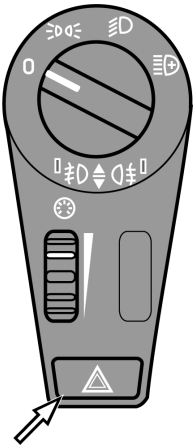
Warning lights

When the switch is pressed in, all the bus's hazard warning lights are turned on. The hazard warning lights can also be used when the main power switch and the ignition are switched off.

WARNING

Use the hazard warning lights if the bus is stopped in a manner that may put other road users at risk.

Note: Regulations for the use of hazard warning lights may vary from country to country.

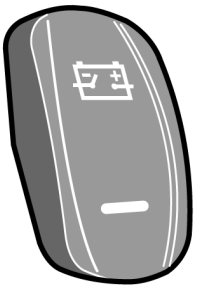


T0012037

Switches

Main switch

The bus is equipped with a main switch. If the main power supply is always switched off when leaving the bus parked, all the heavy power consumers are disconnected, so that there will be sufficient battery capacity available to start the bus again. When the main switch has been turned off, power will still be supplied to the clocks and the auxiliary heater.



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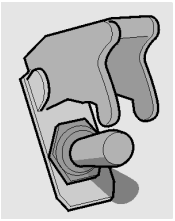
Note: Never turn off the main switch while the engine is running.

Emergency stop

Note: Only use the emergency cut out in an emergency situation.



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When the emergency cut out is activated the following occurs (can vary from country to country):

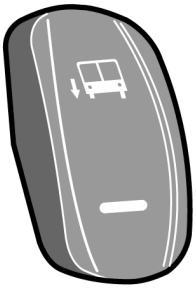
- The engine is turned off
- The main part of the power is cut
- Fuel supply to the engine and outlet from fuel tanks is cut
- Warning lights are activated (some market areas)

Activate the emergency cut out by lifting the cover upwards and pressing up the switch. When the cover is closed the power switch is automatically pressed down to the disconnected position.

Kneeling

Pressing the switch will lower the bus to the lowest entry height. Lowering is halted if the switch is released before 80 % of the lowering has occurred.

Press the upper part of the switch to raise the bus to normal driving height.



T0012054

Conditions for kneeling:

- Engine running
- The speed of the bus must not exceed 5 km/h

Resetting alternatives:

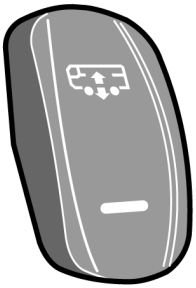
- Restarting the engine
- Press the top half of the kneeling switch
- Press the accelerator and accelerate up to 5 km/h (applicable if the bus is not equipped with door brakes)

DANGER

Ensure that the bus can kneel without the risk of trapping passengers' feet between the door sill and the kerb.

Level control

The ground clearance of the bus can be adjusted with this switch. Press the lower part of the switch to lower the bus. To raise the bus, for example when driving onto a ferry, press the upper part of the switch.



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Note: Level control must only be used temporarily. The switch **must** be in its centre position while driving.

When the bus reaches the selected level a symbol and INFO lamp are shown on the display panel.

The suspension system attempts to keep the bus at the required height irrespective of the load. Any faults in the system are indicated by a symbol and INFO lamp on the display panel.

WARNING

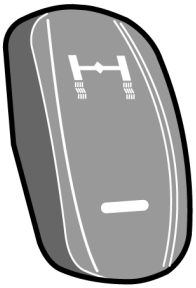
The speed of the bus must not exceed 30 km/h in the high position or 5 km/h in the low position. If this happens a warning message and warning signal are sent.

Traction Control System (TCS)

With the traction control system (TCS) the torque at the wheels is automatically decreased when wheel spin occurs.

At speeds of under 40 km/h the TCS also functions as an automatic differential brake, which brakes the wheel that is spinning.

For more information, see separate driver instructions “EBS”.



T0012059

WARNING

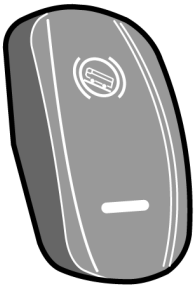
Turn off the TCS before towing.

Hill start help (optional extra)

This function helps the driver to pull away on inclines by holding the bus still until the required torque at the wheels is applied.

The function is activated by pressing the switch. The light in the switch then comes on.

For more information, see separate driver instructions “EBS”.



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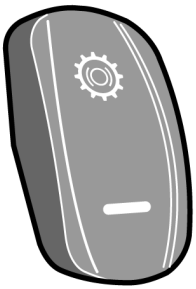
Retarder

The switch activates the retarder that is controlled by the foot control.



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Door brake

The door brake can be activated in different ways, depending on the needs of the customer.

Some buses have a switch. This switch must **always** be activated, i.e. it must not be possible to drive away from where the bus has stopped until the doors have been closed.

The door brake is activated when the road speed decreases to below 5 km/h and a door is opened. The door brake indication lamp is then lit. The door brake is released when all the doors are fully closed and the accelerator is depressed.

WARNING

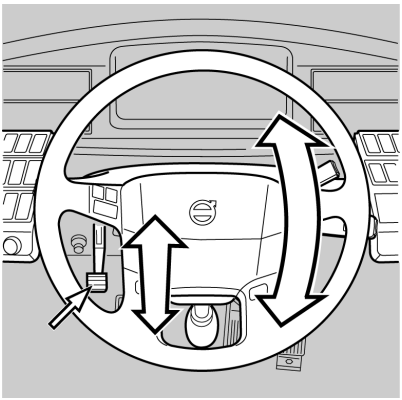
This function should only be switched off in an emergency. The centre/rear door cannot be opened if the door brake is disconnected. Do not use this function for braking or as a parking brake.

Steering wheel adjustment

The steering wheel height and tilt are continuously adjustable.

Adjust the steering wheel as follows:

- Depress the foot pedal shown by the arrow.
- Adjust the steering wheel vertically and horizontally and adjust its angle.
- Release the pedal, and the steering wheel is locked in its new position.



T0012088

DANGER

The steering wheel position must only be adjusted when the vehicle is at a standstill!

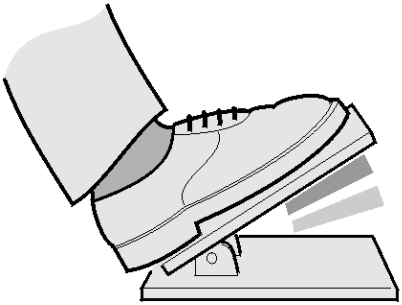
Service brakes

The bus is equipped with an EBS braking system. This system checks and controls the bus's brakes. For more information, see separate driver instructions "EBS".

The EBS system automatically controls the auxiliary brakes together with the service brakes when the brake pedal is pressed. This is referred to as brake blending. The braking system controls the ratio between the braking applied by the auxiliary brake and the normal brakes. This permits optimal use of the auxiliary brake.

If care is not taken when using the wheel brakes while driving down steep and long inclines, they will heat up very quickly to extreme temperatures. As this is normally accompanied by low speeds, the brakes will not be cooled as efficiently as on level roads.

If the service brakes need to be used when going down a hill, do not pump the brake pedal as this only uses up compressed air. Brake moderately, then release the brake pedal completely, or just to the pedal position where the retarder is applied. Heat builds up very quickly in the brakes, causing brake lining wear and reduced brake efficiency.



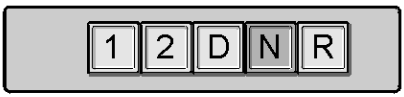
T0009004

The EBS ensures that the different brakes are used in the most effective way. The supplementary brakes are used as much as possible and the normal brakes are applied as required.

Gearbox

Automatic transmission

The bus can be fitted with a Voith or ZF automatic gearbox. The engine can only be started with the gear selector in position **N**.



The automatic gearbox is combined with a panel which has 3 to 6 buttons.
3 buttons: gear positions D, N and R.
5 buttons: gear positions 1, 2, D, N and R.
6 buttons: gear positions 1, 2, 3, D, N and R.

For more information, see separate driver instructions “Automatic gearbox”.

T0009081

Controls

The controls and functions covered in this section are:

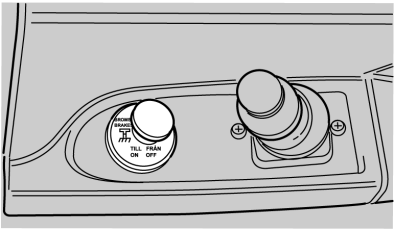
- Blocking valve
- Engine control panel and emergency stop
- Parking brake (emergency brake)
- Direction indicator, full/dipped beam switch
- Idling (programming)
- Windscreen wipers, windscreen/headlight washers
- Tyre inflation valve
- Starter switch (key)

Blocking valve

If the brake system is emptied of air for any reason, for example because the bus has been standing parked for a very long time, the parking brake cannot be released.

To release the parking brake, you must first start the engine and wait until the brake warning light has gone out. Then press the blocking valve.

Even if the hand lever for the parking brake has been moved to the forward position, the brake will not be released until the blocking valve has been pressed in.



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Blocking valve, on the left in the figure. Example of location on the side console.

WARNING

Never begin driving with the warning light on. Stop immediately if it lights when driving. There is a risk that the parking brake could have been applied unintentionally.

Engine control panel

The control panel, (**A**) is located inside a service hatch at the back of the bus. It is used by service personnel for stopping and starting the engine during a check, etc.

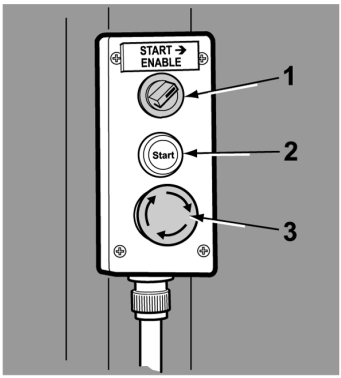
WARNING

The switch must be OFF when working in the engine compartment.

1 **Switch**
Turning the switch clockwise will enable the engine to be started from the driver's position as well as from the engine compartment.
Turning the switch anti-clockwise will prevent the engine from being started from the driver's position or from the engine compartment.

2 **Starter button**
The engine can be started with the start button when the switch is on.

3 **Engine stop**
To stop the engine, the emergency stop button should be pressed in. The emergency stop button remains in the depressed position. To release the button, turn it in the direction of the arrow.



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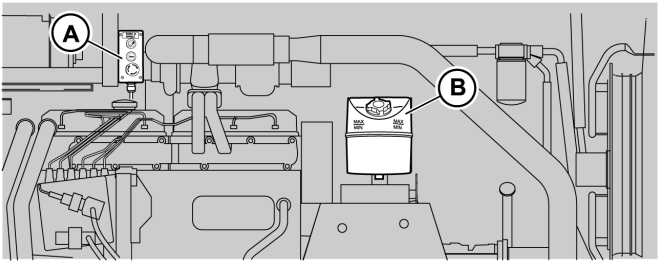
Note: The engine cannot be started whilst the emergency stop button is depressed.



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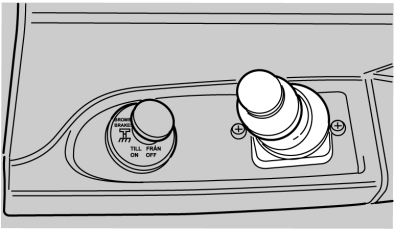
A. The engine control panel.

Parking brakes

The parking brake acts on the drive wheels. When the hand control is in the forward position with the compressed air system charged and the blocking valve depressed, the parking brake is released.

When the parking brake hand control is moved backwards, the parking brake is gradually applied. It is fully applied when the hand control is in its backmost, locked position.

To release the parking brake hand control from the locked position, lift the ring upwards and move the lever forwards.



T0012609

Control for the parking brake, on the right in the figure. Example of location on the side console.

WARNING

Never leave the bus without applying the parking brake hand control and ensure that it is in the locked position.
Never drive with the warning light lit.

Emergency brake

To use as the emergency brake: Move the control gradually backwards to the parking position. Keep the catch pulled in all the time, or the control will fasten in the locked position.

WARNING

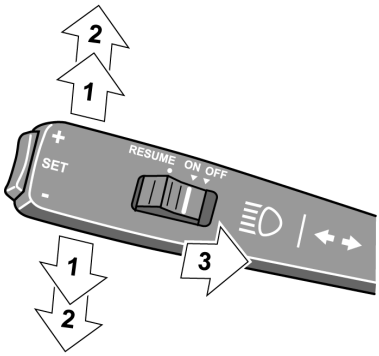
The parking brake can and should only be used as an emergency brake if pressure in the foot brake is lost. As the parking brake only acts on the driving wheels, the braking distance will be longer than when braking with the ordinary service brake system. Braking with only the driving axle also increases the risk of skidding.

Direction indicator, full/ dipped beam switch

1 **Headlight flash position**.
When turning with only slight steering wheel movement (changing lanes, overtaking), press the lever lightly up or down and keep it there with your finger. The lever will return to neutral position immediately it is released.

2 Move the lever past the headlight flash position.
The direction indicators will stay on until the lever is returned manually or the steering wheel returns after turning a corner.

3 **Headlights** "flash".
Pull the lever towards the steering wheel (until slight resistance is felt).
The high beam headlights will remain lit until you release the lever.
Main / dipped beam switch (headlights on)
Pull the lever towards the steering wheel, past the "flash position" and release it. The headlights alternate between high and dipped beam.



T0012077

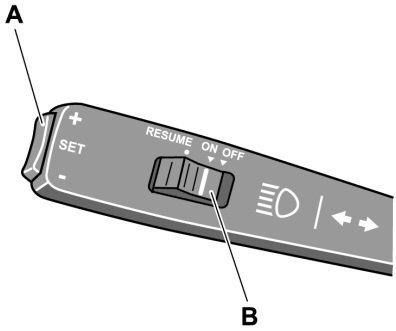
Idling (programming)

The normal engine idling speed shall be 575–625 rpm. The electronic control system will ensure the idling speed remains constant so that manual adjustment should not be required. When the bus is stationary, the idling speed can increase temporarily to 1200 r/min.

Low idle adjustment

Before beginning to adjust the idling speed, the engine must be warmed up to its operating temperature. The bus must be stationary with the engine idling.

- The control button (**B**) must be set to ON
- The engine speed increases when the + end of the SET button (**A**) is pressed. Each button press gives an increase of 10 rpm.
- If the engine rpm becomes too high, it can be lowered by pressing the – end of the SET button. Each button press gives a reduction of 10 rpm.



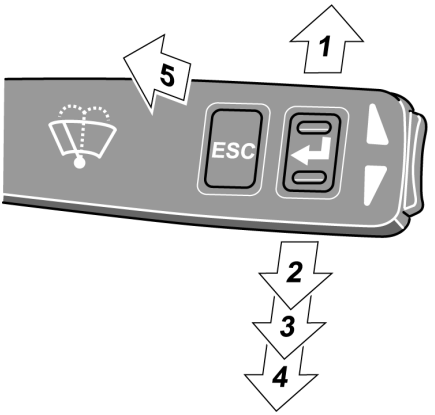
T0012078

Note: The change in idling speed is only temporary. After pressing a pedal, engaging a gear or releasing the parking brake, the idling speed will return to its manufacturer settings.
If new programming of idling rpm is required, keep your foot on the brake pedal and turn off the engine when the new engine rpm has been set.

Note: If the engine does not “run smoothly” at the speed programmed by the manufacturer, advice must be sought from a Volvo workshop.

Windscreen wipers, windscreen/ headlight washer

Note: The lever is also used to change the appearance of the display. For more information on changing the display see the separate driver instruction “Display”.



1 **Interval wiping**.
This is used when driving in mist or drizzle.
The wipers make a stroke every ten seconds. For shorter intervals, move the lever to its normal position and then to the intermittent position again when the next step is to start. In this way the interval time can be adjusted to between 1–10 seconds.

2 **Flick wipe position**.
If you want the wiper to make only one or two strokes (e.g. in drizzle), move the lever to the flick wipe position and keep it there with your finger. The wipers will stop in the parking position after releasing the lever.

3 **Windscreen wipers**, normal speed.

4 **Windscreen wipers**, high speed.

5 **Windscreen washer** + headlight washers.
The windscreen wipers also start with the lever in this position and make 2–3 strokes after the lever is released.

The headlight washers and windscreen washers have a common fluid reservoir.

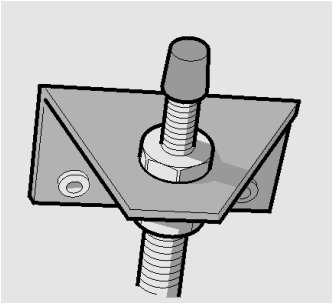
Tyre inflation valve

The tyre inflation valve can be used to :

- inflate a tyre using the bus pneumatic system
- release the parking brake with air from a tyre

Its main use is to release the parking brake in a situation when the bus cannot supply its own air, e.g. engine breakdown.

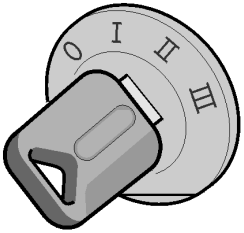
The bus toolbox contains a hose that connects between the tyre and the tyre inflation valve.



T0008908

Starter switch (key)

The starter switch has four positions:



T0008969

0 Stop position

I Intermediate position
Some electrical components can be used according to customer requirements.

II Driving position
Between positions II and III, there is a spring-return position for preheating. For more information on preheating, see “Starting a cold engine” page 44.

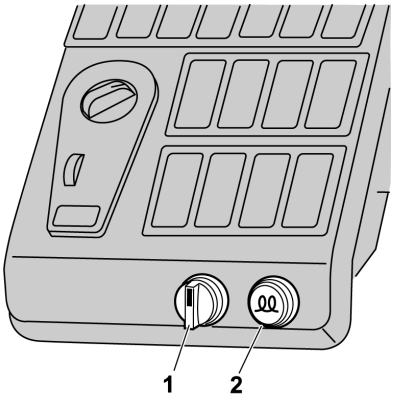
III Starting position
Spring return.

Note: The steering lock is activated when the key is removed from the starter switch.

The key can only be removed in the stop position.

Start switch and preheating button

Some buses are equipped with a start switch (1) and a preheating button (2). The start switch has two positions. The first position is ignition. On turning the key further the engine starts. For more information on preheating, see “Starting a cold engine” page 44.



T0012198

Summary

As the driver, you must always be familiar with the location of emergency equipment in the bus and how it is used.

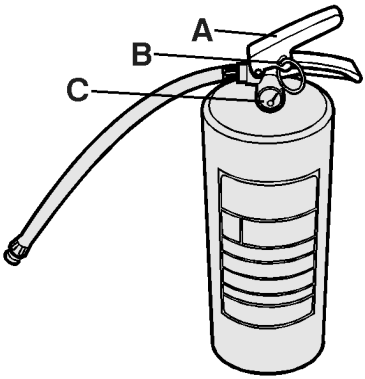
It is essential that all emergency equipment is checked regularly so that it is in working order and in place. The location of the equipment can vary. Find out where the equipment has been stowed, and make sure that nothing is missing.

Fire extinguisher

The fire extinguisher is used to put out fires in volatile fluids, wood, fabric, paper and electrical equipment. Regularly check that the pressure gauge needle is in the green zone.

How to use the fire extinguisher:

1 Take the fire extinguisher off its bracket.
2 Hold the extinguisher with one hand, and pull the safety pin out with the other hand.
3 Aim the rubber hose at the centre of the fire and pull the trigger.

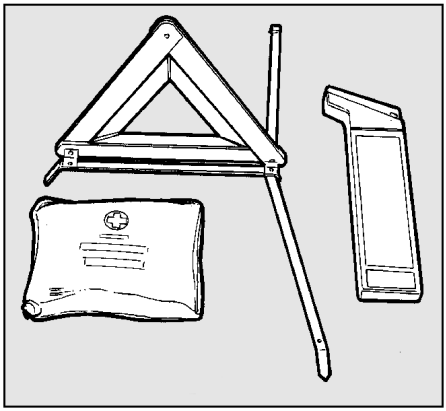


T0008196

A Trigger
B Safety pin
C Manometer.

Warning triangle

Use the warning triangle whenever you stop the bus where it is a danger to other traffic Switch on the hazard warning lights and place the warning triangle at least 100 m behind the bus.



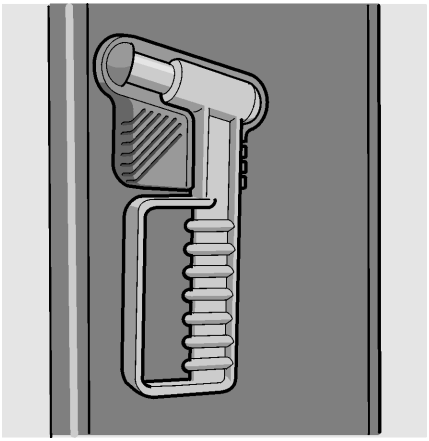
T0009181

First-aid cushion

The cushion contains basic materials for giving first aid.

Emergency hammer

The emergency hammer is used to break the windows in an emergency.



T0008902

Toolbox

Toolbox with contents. Contact your distributor to order.

Example of a complete toolbox:

Tools	Part no.
Adjustable spanner	755
Polygrip pliers	9985326
Hammer	962207
Combination screwdriver	978201
10 ton jack, telescopic	3178732
Crank	1590997
Jack extension	1586079
T-handle	1577686
Socket spanner, 33	9521826
Handle	3981012
Square spanner	1089953
Square spanner	190627
Screwdriver	9985309
Nipple	342782
Hose 6.3 x 4	942868
Pump nipple	342781
Hose clamp (2 off)	942458
Tool bag	1577384
Test lamp	1577389

Daily inspection

Note: It is a good idea to do these checks after a tour as the engine is then at normal operating temperature.

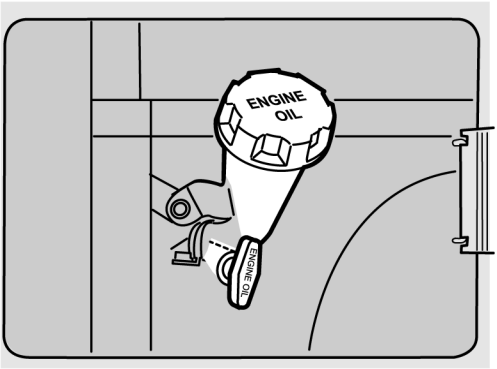
Check engine oil, servo oil and coolant levels daily. Check these when the engine is **warm** but not running.

The reservoirs are located in the rear of the bus.

Engine

When checking the oil level:

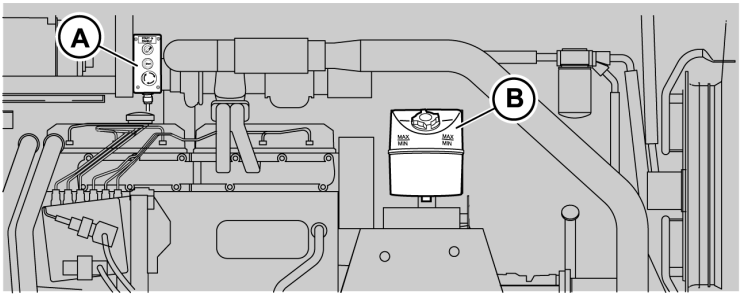
- Place the bus on level ground.
- If the engine is cold, allow it to idle for 1 or 2 minutes
- Switch off the engine. Wait at least 2 minutes before checking, preferably longer.
- Pull out the dipstick and wipe the end with a cloth
- Measure the oil level using the dipstick. The level should between min and max
- Top up as necessary



T0012645

Steering servo / Hydraulic fan

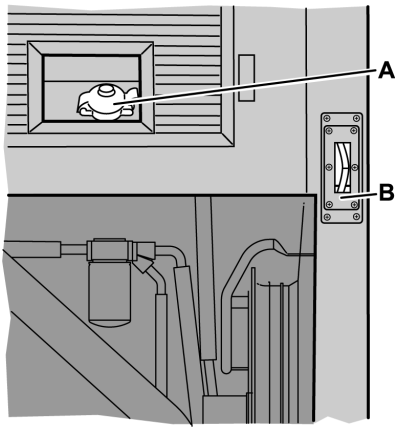
Check that the oil level is between the max. and min. marks on the reservoir (**B**). Top up as necessary.



T0012868

Coolant

Check that the coolant level is between the max. and min. marks on the reservoir (**B**). Top up as necessary (**A**).



T0012644

Checks before driving

Before the engine is started and the bus driven, the door sensor edges must be checked.

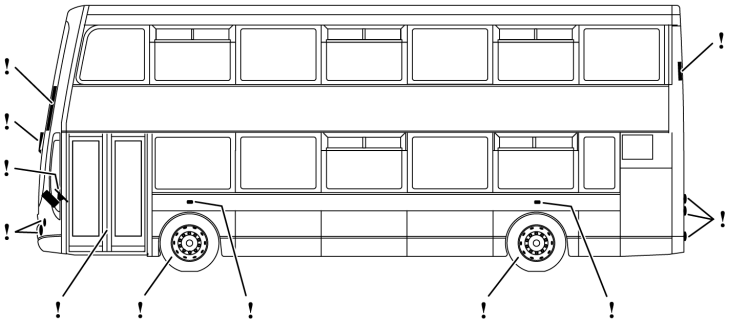
Open the door by using your foot to break the photocell beam low down near the floor. When the door starts to close, you can fold or compress the vertical rubber profile on the edge of the door leaf, and the door should open again.

Close all hatches and make sure of the following:

- all the lighting is in working order
- the windscreen wipers/washers are working
- the destination signs are set correctly
- safety equipment is in its specified place
- direction indicators and horn are in working order
- the air pressure in the tyres using a hammer, and check that nothing has got stuck between the rear wheels
- the air drier works
- the emergency opening system for the doors is in working order

WARNING

If the sensor edges do not function, there is a risk that passengers may be injured.



T0012881

Checking warning lights

When the start key is in position **I** or the feed switch is in position **C**, the control system carries out a functional test of all the warning lights.

All the warning lamps and the warning LEDs in the instrument gauges are lit for about 5 seconds. ABS/EBSsystem indicator lights will remain lit somewhat longer than the other lights. If they continue to be lit, a fault in the ABS/EBS system has been detected.

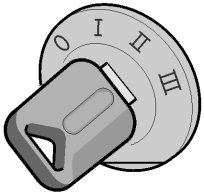
Starting the engine

Start

When starting, the parking brake should be applied and the gear selector should be in the **N** position.

Starting a cold engine

To avoid exhaust smoke when starting the engine the inlet air should be preheated where outside temperatures are around 10° C and lower.



T0008969

Proceed as follows:
Turn the key between positions **II** and **III** (some buses are equipped with a start switch and a preheating button). Preheating will start and continue for up to about 50 seconds depending on the temperature of the coolant. The indicator lamp lights when preheating is in progress. When the light goes out, or the temperature gauge begins to register, the engine can be started.

Do not race the engine when it is cold. This could damage the engine.

CAUTION

In extremely cold climates (< –20° C) the cold engine must not be run at more than 1000 rpm.

Starting a hot engine

Start directly by turning the key to start position or by turning the start switch to start position.

Engine shut-down

The engine is switched off when the key is turned to the stop position or the start switch is turned to position **0**. In an emergency situation it is possible to stop the engine with the emergency stop, see “Emergency stop” page 18.

Checks after the engine has been started.

The coolant level warning lamp will remain lit for a second or so after the engine has been started. The parking brake warning lamp should light when the parking brake is applied. Once the parking brake has been released, the warning lamp will remain lit until the pressure has reached approximately 540 kPa. The warning lamp for the normal brakes and the “STOP” lamp should remain lit for as long as the pressure in the compressed air tank is too low.

WARNING

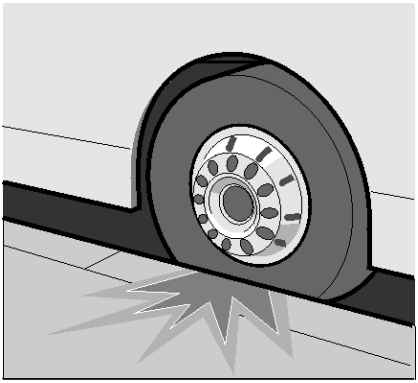
Do not drive until the warning lamps have gone out.

Power steering

If the wheel is blocked on one side against a kerb for example, drive carefully forward while turning the steering wheel to free the wheel. Never force the wheel to turn.

Never attempt to turn the bus using hard pressure on the steering wheel. Hard pressure on the steering wheel increases the pressure in the servo steering system, which increases the risk of overheating and can damage the oil pump.

If the power steering is out of action for some reason, and the servo steering does not work, it can feel as though the steering gear has become locked. This is not the case and the bus can be steered if the wheel is turned with increased force.



T0008960

Safe driving

1 Check after starting, and regularly when you are driving, that the instruments show normal readings. If any of the warning lights come on while driving, stop immediately and investigate the cause.

2 Never race a cold engine! Avoid long periods of idling.

3 Never cover the radiator! The thermostat will maintain the correct temperature in all conditions. Regularly check the coolant level and always use the correct coolant. Also check the hoses and belt tension. Do not drive with a leaky cooling or heating system.

4 Never drive off until the brake system warning lights have gone out. The control lamps for ABS/EBS may light up and indicate that the system is not working.

5 Never use the force of the power steering sideways when the front wheels are locked against a kerb, etc.

6 Use the retarder function when driving down hills and for slow braking. Be careful or disengage the retarder function when the roads are slippery.

Economical driving

The driver is the most important link in the chain for obtaining the best possible fuel economy.

1 **Warm up the engine as quickly as possible.** A warm engine and transmission uses less fuel than a cold one (and there is less wear).
2 **Treat the accelerator pedal with care.** Observe the traffic conditions to avoid acceleration followed by heavy braking.
3 **The tachometer and turbocharger boost gauge** helps you to drive economically.
4 **High speeds use a lot of fuel** because, among other things, the air resistance increases greatly as speed increases. Strong side and head winds increase fuel consumption further.

Security

WARNING

Always make passenger safety your first priority !

If anything happens it is important to do the following:

1 Stop the bus.
2 Open the doors. If necessary use the emergency door opener, which is next to the door.
3 Let the passengers out.
4 Set the ignition key in position 0.
5 Turn off the main power switch, see “Main switch” page 17.
6 If necessary, activate the emergency stop, see “Emergency stop” page 18.
7 If necessary, activate the warning light, see “Warning lights” page 16.

Example of an emergency door opening switch. Placed next to the door.

Punctures

There are many safety aspects to considerer when getting a puncture. For detailed information about changing wheels, see the separate driver instructions “Punctures”.

Punctured air bellows

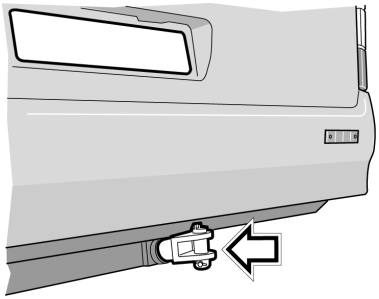
If any of the bus air bellows is punctured the speed **must** be reduced to **max. 20 km/h** after which it can be driven to the nearest garage.

Towing

Use the towing bar when towing! When the parking brake is released mechanically, the bus cannot be braked with either the foot or the parking brake. Chock the wheels or connect a towing bar to the towing vehicle, so that the bus cannot begin to roll when the parking brake is released.

The power steering does not function when towing. Steering will be very heavy.

When towing, the propeller shaft or both the rear axle drive shafts must be removed, otherwise the gearbox may be damaged due to poor lubrication. If the bus is parked in such a way that this is not possible, it can be towed up to 200 metres before the work of removing the propeller shaft/drive axles is begun.



T0009642

Position for the towing pole, rear.

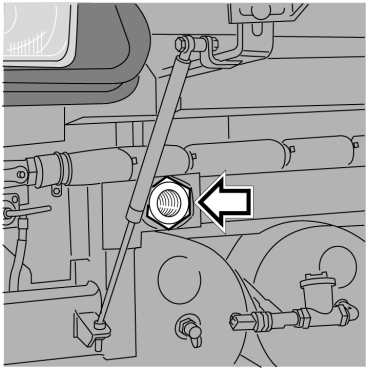
If there is a puncture, the tyre must be repaired before towing begins.

Note: The tow pole connections are only to be used for towing. They are not to be used for salvaging.

Note: Before towing deactivate the TCS and have the axle raised slightly.

WARNING

The bus is very heavy to steer when towing as the servo does not function when the engine is not running.

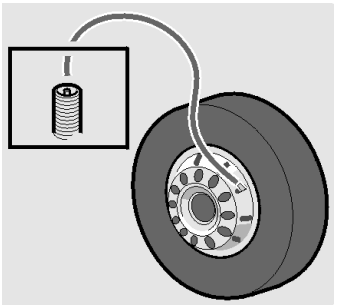


T0009643

Position for the towing pole, front.

Releasing the parking brake

Releasing the parking brake with air from the bus's own tyres



T0009182

1 Chock the wheels or connect a towing bar to another vehicle, so that the bus cannot start to move.
2 Connect the clamp head of the tyre inflation hose to the valve of one of the tyres.
3 Move the parking brake control to the drive position.
4 Press the hose's other end against the tyre inflation valve at the same time as you press in the blocking valve. The brake system is now filled with air from the tyre. Filling can be stopped as soon as the transfer flow has ceased.

Note: When the system is de-pressurised, the foot brake will not work.

WARNING

Chock the wheels to prevent the bus from moving when releasing the parking brake.

Mechanical release of the parking brake

1 Always chock the wheels or connect the towing pole to the towing vehicle so that the bus cannot start moving when the brake is released.
2 There are release bolts on both drive shaft brake cylinders. Unscrew them until a red plastic button appears out from the centre of the bolt. The brakes are then released. This requires about 45 turns. Use the designated spanner from the toolkit or the sleeve and locking handle.
3 The bus can now be towed. Towing **must** be done with a towing pole, since the bus has no brakes at all.

Note: Do not forget to reset the bolts to their original position and attach the plastic cover after towing has been completed.

Changing the batteries

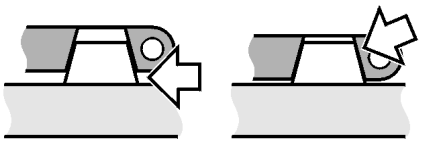
When changing the batteries, both batteries must have the same capacity and age. The batteries must be connected with the correct polarity.

- Turn off the main switch.
- Remove the cable from the negative battery terminal.
- Remove the cable from the positive battery terminal.
- Change the battery.
- Clean the cable clamps and the battery poles.
- Install the positive battery terminal cable.
- Install the negative battery terminal cable.
- Protect the battery terminals with rust-prevention compound.

WARNING

Incorrect connection will seriously damage the electrical system.

If a cable clamp has been incorrectly installed, the battery terminal must be reamed to give a sufficiently large mating surface when correctly installed. Incorrect installation entails a high risk of oxidisation in the space between the top of the battery terminal and the battery cable clamp.



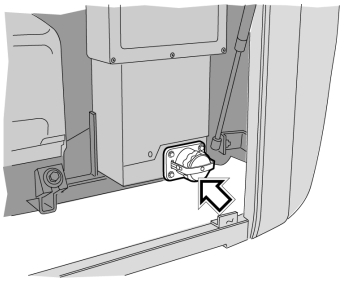
T0009006

When incorrectly installed, the cable clamp will not bottom. When correctly installed, the cable clamp will bottom.

Rapid charging

The bus has a connection for an external power supply located next to the battery box. During rapid charging, the main switch must be turned off to avoid supplying excess voltage to the electrical equipment in the bus.

Note: The rapid charge connector is not dimensioned for starting assistance.



T0009644

Starting assistance

If the battery capacity is too low to start the engine, auxiliary batteries can be used as starting assistance. These are connected in parallel with the ordinary batteries in the bus.

Note: Note the polarity. Plus to plus and minus to minus.

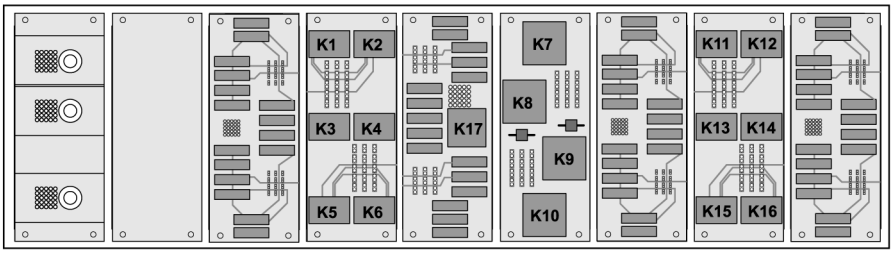
CAUTION

Battery chargers with a start boost facility must not be used for starting assistance. This could damage the electrical system.

Fuses and relays

The fuses and relays unit is at the front of the bus.

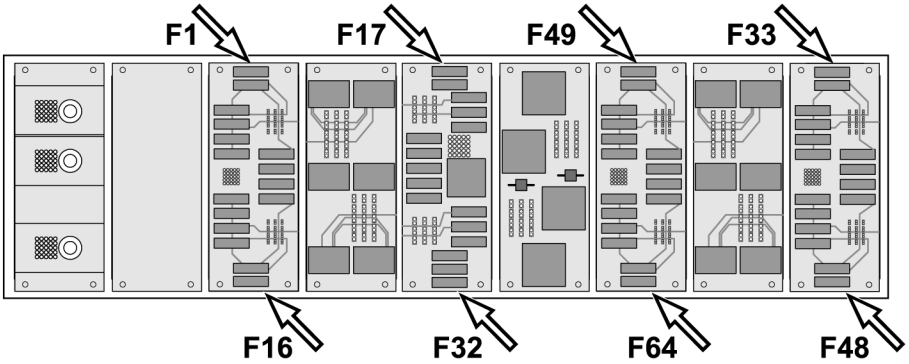
Relays



T0012034

Relays			
K1	VECU (vehicle control unit), EECU (engine control unit)	K11	Start inhibit relay
K3	Self-holding relay, ECS	K12	Starting signal, starter motor
K4	GECU (gear selector control unit)	K14	—
K5	—	K15	—
K6	—	K16	—
K7	Baggage hold lighting	K17	Ignition relay (+15)
K8	Neutral signal inverting relay	K48	Preheating relay (placed on the bracket in the engine compartment, next to the emergency stop)
K9	Interval relay, windscreen wiper motor	K51	Main supply relay (placed in a metal box at the side of the battery holder)
K10	Neutral signal inverting relay		

Fuses



T0012035

Fuses					
F1	5 A	ECS (electronic controlled spring)	F2	10 A	BIC (instrument), control switch
F3	15 A	Starting signal, starter motor	F4	20 A	EBS (brakes control unit)
F5	5 A	Horns	F6	30 A	Safety lock
F7	15 A	—	F8	5 A	GECU (gear selector control unit)
F9	5 A	Starting switch, engine compartment	F10	5 A	Fire Alarm
F11	10 A	Dynafleet (option)	F12	5 A	Supply, main switch (+30) to body-builder outlet
F14	5 A	BBM (body-builder module)	F15	15 A	EECU (engine control unit)
F16	5 A	VECU (vehicle control unit)	F17	5 A	Lighting, switch for intensity control
F18	5 A	Alternator 1, 2, 3	F20	10 A	EBS (brakes control unit)
F21	15 A	Wiper motor, windscreen	F22	5 A	Control valve, cooling fan
F24	5 A	BIC (instruments)	F25	15 A	Wiper motor, headlights
F26	5 A	ECS (electronic controlled spring)	F27	10 A	—

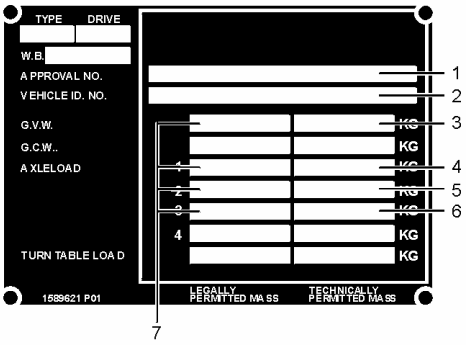
F28	10 A	—	F29	5 A	Supply, ignition (+30) to body-builder outlet
F30	5 A	Radio, voltage converter 24–12V	F31	5 A	Hydraulic oil level, hydraulic oil filter
F32	5 A	Tachograph	F33	5 A	BIC (instruments)
F34	10 A	Tachograph	F35	25 A	LCM (external lighting control unit)
F36	25 A	LCM (external lighting control unit)	F37	25 A	LCM (external lighting control unit)
F42	5 A	Emergency stop switch, main switch	F44	25 A	LCM (external lighting control unit)
F45	25 A	LCM (external lighting control unit)	F46	25 A	LCM (external lighting control unit)
F49	5 A	Fuel shut-off valve	F50	10 A	—
F51	20 A	Radio, voltage converter 24–12V	F52	10 A	Baggage hold lighting
F53	10 A	—	F54	5 A	Ignition
F55	10 A	VCB (compression brakes), EPG (exhaust pressure control)	F56	5 A	Pre-heating element
F59	10 A	TECU (gearbox control unit), Voith automatic gearbox	F60	5 A	XK1:5
F62	5 A	XK2:5	F80	125 A	Main battery fuse (B+)
F81	80 A	Power supply main fuse (+30)	F93	5 A	Alternator

Type plates

The vehicle identification number (VIN) is marked on an identification plate on the bus.

Product identification plate

The product identification plate is divided into a legal requirement section, punched inside the inner frame on the plate, and three fields for chassis type, drive and wheelbase. The latter is not used for buses, only for trucks. The identification plate is located by the driver's seat and contains the following information.



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1 If special national approval is required, the approval number is punched in here by the general agent/importer.

2 The VIN is the same number that can be found on the frame member.

3 Max gross vehicle weight (kg), technical.
Technical weight refers to the weight for which the bus was constructed.

4 Max front axle weight (kg), technical.

5 Max rear axle weight (kg), technical.

6 In applicable cases, max axle weight (kg), technical, for the 3rd axle.

7 If national gross vehicle weight or axle weight regulations are prescribed to lower levels then the technical maximum values, the general agent/importer should insert the values that apply.

Vehicle Identification Number (VIN)

This is punched on the chassis, on the right front section of the vehicle, i.e. in the wheel housing in front of or behind the front axle.

Example:

YV3 Manufacturer
1M Chassis version
A4 Engine version
1 Brake system
8 Check digit
X Model year
A Assembly factory

Engine

Type designation, component number and serial number are punched on the top of engine block near the injector pump.

Gearbox

The type designation and serial number are punched on the top of the gearbox.

Final drive

Plate on right-hand side of pinion housing.

Retarder

Serial number and version are stamped on rear left side of retarder housing.

Service intervals

Regular service in accordance with the special service programme is needed to maintain the original performance of the bus throughout its service life.
Have all service and maintenance for your bus carried out at a Volvo workshop.
They have the trained personnel, the special tools and the service literature needed to give high quality service. In addition, they use Volvo Original Spares, which have the same quality as the components installed by the Volvo factory.
Refer to separate service literature for service intervals.

No chemical cleaners with high alkaline content (PH>12) may be used for washing the bus.

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VOLVO

Volvo Bus Corporation

Göteborg, Sweden

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